

Claims:

1. A turbocharger having a center housing (1) and a thin-walled exhaust housing (13), both housings being connected to each other at cylindrical end portions (28, 27) thereof by use of a floating flange ring (16) having a clamping surface (26b) which upon applying an axial load exerts at least an axial force component for urging the end portion (28) of the thin-walled housing (13) against the end portion (27) of the center housing (1).
2. A turbocharger according to claim 1, wherein said clamping surface (26b) is slanted so as to exert a radial force component additionally to the axial force component.
3. A turbocharger according to claim 2, wherein said clamping surface (26b) is slanted such that said radial component is directed to the central axis of said housing portions.
4. A turbocharger according to any of claims 1 to 3, further comprising at least a counter part (29) to the floating flange ring (16) having a clamping surface on the side of the end portion, which forms a flange portion (27), opposite to the clamping surface (26b) of the floating flange ring (16).
5. A turbocharger according to claim 4, further comprising at least a screw (23) for applying said axial load between said counter part (29) and said boss (18) forming a part of said floating flange ring (16).
6. A turbocharger according to claim 4 or 5, wherein said floating flange ring (16) is provided with at least three bosses (18), each receiving one of the screws (23), the bosses (18) projecting radially from the floating flange ring (16), and at least three washers (19) form said counter part (19).

7. A turbocharger according to claim 6, wherein said bosses (18) receive said screws (23) in through holes and the screws (23) are tightened by means of nuts.
8. A turbocharger according to claim 6, wherein said bosses (18) receive said screws (23) in blind holes (19) having inner threads.
9. A turbocharger according to any of claims 6 to 8, wherein said bosses (18) are positioned at regular intervals.
10. A turbocharger according to any of the preceding claims, wherein adjacent to a tip end of the clamped end portion (28) of the thin-walled housing (13) a notch (22) is provided in the floating flange ring (16) so as to receive said tip end.
11. A turbocharger according to any of claims 4 to 10, wherein a single counter part (29) is provided having bores for each of the screws (23).
12. A turbocharger according to any of the preceding claims, further comprising a sealing device (24) disposed between the flange portion (27) and the end portion (28) of the thin-walled housing (13).
13. A turbocharger according to claim 12, wherein the sealing device (24) has a four-sided cross-section one side (26) of which is slanted to be parallel to the slanted clamping surface (26b) of the floating flange ring (16).
14. A turbocharger according to claim 12 or 13, wherein the sealing device (24) is in contact with flange portion the flange portion (27), an outer surface of an insert (11) being mounted to the center housing (1) and the clamped end portion (28) of the thin-walled exhaust housing (13).
15. A turbocharger according to any of claims 12 to 14, wherein the sealing device (24) is made from a resilient material.

16. A turbocharger according to any of the preceding claims 1 to 15, wherein the clamped end portion (28) of the exhaust housing (13) is slanted to be parallel to the slanted clamping surface (26b) of the floating flange ring (16).

17. A turbocharger according to any of preceding claims 1 to 16, wherein said flange portion (27) has a substantially rectangular cross-section.

18. A turbocharger according to any of preceding claims 1 to 17, wherein the side of the flange portion (27) facing the clamped end portion (28) of the thin-walled exhaust portion (13) is parallel to the latter.

19. A method for assembling a turbocharger, comprising a thin-walled housing (13), an inlet (13b), a center housing (1) and an insert (11), having the features of any of the claims 1 to 18, the method being characterized in the following steps:

orientating and holding a center housing assembly comprising the center housing (1) and the insert (11) by means of a jig;

setting a thin-walled housing assembly comprising the thin-walled housing (13) and the floating flange ring (16) on the center housing assembly;

bringing the inlet (13b) in contact with a jig portion which has a fixed orientation with respect to said jig so as to set the orientation of the inlet (13b) relative to the turbocharger.

AMENDED CLAIMS

[received by the International Bureau on 24 February 2005 (24.02.05);
Original claims 1-19 replaced by new claims 1-18 (4 pages).]

+ STATEMENT

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Claims 1 to 18 amended under Article 19 PCT

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1. A turbocharger having a center housing (1) and a thin-walled exhaust housing (13), both housings being connected to each other at cylindrical end portions (28, 27) thereof by use of a floating flange ring (16) having a clamping surface (26b) which exerts at least an axial force component for urging the end portion (28) of the thin-walled housing (13) against the end portion (27) of the center housing (1), **characterized in that**

the turbocharger further comprises at least a counter part (29) to the floating flange ring (16) having a clamping surface on the side of the end portion, which forms a flange portion (27), opposite to the clamping surface (26b) of the floating flange ring (16), wherein said axial force component is exerted upon applying an axial load to said clamping surface (26b) by means of said counter part.

2. A turbocharger according to claim 1, wherein said clamping surface (26b) is slanted so as to exert a radial force component additionally to the axial force component.

3. A turbocharger according to claim 2, wherein said clamping surface (26b) is slanted such that said radial component is directed to the central axis of said housing portions.

4. A turbocharger according to any of claims 1 to 3, further comprising at least a screw (23) for applying said axial load between said counter part (29) and a boss (18) forming a part of said floating flange ring (16).

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5. A turbocharger according to claim 4, wherein said floating flange ring (16) is provided with at least three bosses (18), each receiving one of the screws (23), the bosses (18) projecting radially from the floating flange ring (16), and at least three washers (19) form said counter part (19).

10 6. A turbocharger according to claim 5, wherein said bosses (18) receive said screws (23) in through holes and
15 the screws (23) are tightened by means of nuts.

7. A turbocharger according to claim 6, wherein said bosses (18) receive said screws (23) in blind holes (19) having inner threads.

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8. A turbocharger according to any of claims 5 to 7, wherein said bosses (18) are positioned at regular intervals.

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9. A turbocharger according to any of the preceding claims, wherein adjacent to a tip end of the clamped end portion (28) of the thin-walled housing (13) a notch (22) is provided in the floating flange ring (16) so as to receive said tip end.

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10. A turbocharger according to any of claims 1 to 9, wherein a single counter part (29) is provided having bores for each of the screws (23).

11. A turbocharger according to any of the preceding claims, further comprising a sealing device (24) disposed between the flange portion (27) and the end portion (28) of the thin-walled housing (13).

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12. A turbocharger according to claim 11, wherein the sealing device (24) has a four-sided cross-section one side (26) of which is slanted to be parallel to the slanted clamping surface (26b) of the floating flange ring (16).

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13. A turbocharger according to claim 11 or 12, wherein the sealing device (24) is in contact with flange portion the flange portion (27), an outer surface of an insert (11) being mounted to the center housing (1) and the clamped end portion (28) of the thin-walled exhaust housing (13).

14. A turbocharger according to any of claims 11 to 13, wherein the sealing device (24) is made from a resilient material.

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15. A turbocharger according to any of the preceding claims 1 to 14, wherein the clamped end portion (28) of the exhaust housing (13) is slanted to be parallel to the slanted clamping surface (26b) of the floating flange ring (16).

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16. A turbocharger according to any of preceding claims 1 to 15, wherein said flange portion (27) has a substantially rectangular cross-section.

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17. A turbocharger according to any of preceding claims 1 to 16, wherein the side of the flange portion (27) facing the clamped end portion (28) of the thin-walled exhaust portion (13) is parallel to the latter.

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18. A method for assembling a turbocharger, comprising a thin-walled housing (13), an inlet (13b), a center housing (1) and an insert (11), having the features of any of the claims 1 to 17, the method being characterized in the
5 following steps:

orientating and holding a center housing assembly comprising the center housing (1) and the insert (11) by means of a jig;

10 setting a thin-walled housing assembly comprising the thin-walled housing (13) and the floating flange ring (16) on the center housing assembly;

15 bringing the inlet (13b) in contact with a jig portion which has a fixed orientation with respect to said jig so as to set the orientation of the inlet (13b) relative to the turbocharger.

Statement under article 19(1) PCT

The new claim 1 goes back to the original claims 1 and 4. The new claims 2 to 3 correspond to the original claims 2 to 3, and the new claims 4 to 18 correspond to the original claims 5 to 19, respectively.

The features of the new claim 1 are disclosed in the original claims 1 and 4 and the description page 2 line 29 to page 3 line 5 and page 9 lines 12 to 16.